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Morgan Hebard

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Morgan Hebard
(1887–1946)

Morgan Hebard was born in Cleveland, Ohio, February 23, 1887, the only child of Charles Samuel and Hannah Morgan Hebard. On the paternal side his forebears were old pre-Revolutionary Connecticut stock, and one of his ancestors was Brigadier General Ebenezer Learned, Commander of the Connecticut Brigade at Valley Forge. His great grandfather, Learned Hebard, was a Congressman about one hundred years ago, and Chairman of the first Republican convention held in the state of Connecticut. His mother's father, David Morgan, was born in Wales, came to America as a young man, and settled in Cleveland, Ohio, where over the years in the iron and steel industry he built a considerable fortune.

Charles Hebard, the paternal grandfather of Morgan, was a successful lumberman, first in the Pocono country of Pennsylvania, and subsequently in the northern peninsula of Michigan. To this business his activities, and those of his two sons, Charles Samuel and Daniel Learned, were largely devoted during their lives. Gradually the business expanded so that they ultimately acquired from a land drainage company almost the entire area of the Okefinokee Swamp in southeastern Georgia. This great tract of almost five hundred square miles, originally containing an enormous stand of cypress, was ultimately acquired from the Hebard family by the United States Government as a wild life reserve.

While Charles S. Hebard and Daniel L. Hebard, like their father Charles Hebard, regarded Philadelphia as their home city, and maintained residences in suburban Chestnut Hill, all three

families, in Morgan's younger years, had winter homes at Thomasville, Georgia, and summer homes at Pequaming, Michigan, the site of the family lumber mills, on the southern shore of Lake Superior. In addition in winters at the turn of the century, Morgan's family spent periods of some weeks each at Miami, Florida, a community then in relative infancy, and on these visits he formed an acquaintance with the life of the now largely vanished or despoiled hammocks of southern Florida, which proved of value to him in studies of after years. An early interest in Lepidoptera was established largely by these visits to Thomasville and Miami, and his then-acquired knowledge of many of the moths and butterflies of those areas remained undimmed through his later life, which was largely devoted to critical work with other insects. His life-long interest in comparative faunistics was early nurtured by the opportunity for contrasting the Lepidoptera of these areas with those forms to be found about his Chestnut Hill home.

Morgan Hebard's interest in nature was inherent, and the collector's instinct also was early developed. In his youth his education was acquired from governesses or tutors, who moved with the family from Philadelphia to their other seasonal homes. In 1904 he entered Asheville School at Acton, North Carolina, and on graduating there followed the family precedent and entered Yale University, emerging with the Bachelor of Arts degree in 1910.

His boyhood collections covered a wide range, from historical relics to postage stamps, but the interest in nature was always paramount, accompanied as it was by the determination to find out as much as he could about a matter of particular interest, even if this entailed wading in swamps (without boots!) or excavating gopher holes. One characteristic early developed was a meticulous exactness and neatness in labelling his possessions, an appreciation of orderly arrangement which remained a marked trait throughout his life.

My first meeting with Morgan Hebard was in 1903, when as a young man of sixteen he came to the Academy of Natural Sciences in Philadelphia to determine some of his Lepidoptera captures. Dr. Skinner, then Curator of Insects, had met him pre-

viously and encouraged his interest. As a student then, some five years older, I gave him such assistance as was in my power and the acquaintance then formed ripened into a friendship and association which lasted through the years until his death, becoming to each of us a very vital part of our lives. Gradually he became interested in the Orthoptera, with which I had been working for some few years, and as he realized there was a very great deal to be learned about the insects of that order, and that he was fully capable of bringing to light much previously unknown concerning them, even of species from nearby areas, his native enthusiasm and energy turned toward the Orthoptera. In March, 1904, at the invitation of his parents, I spent a month with him at Thomasville, and daily we ransacked the country roundabout for Orthoptera. I encouraged him to put his observations in writing, and the results of this month of work appeared in 1905 as our first joint paper.

In the autumn of 1904 Morgan went to school at Acton and school terms were spent there for nearly two years, but all spare time in potential collecting seasons was occupied in climbing ridges and combing valleys, laying the foundations for a most comprehensive knowledge of the Orthoptera of the Southern Appalachians, which field always remained one of great interest to him. One summer of his school years was spent with his family in the Yellowstone and parts of the Colorado Rockies, while in part of another (1905) we were working together in northern Florida, with yellow fever rampant in New Orleans, as well as present in Pensacola, and quarantine regulations in force on every hand, which required us to have daily railroad station stampings placed on our Philadelphia health certificates, without which we could not enter the state of Florida. During his college years two summers were spent in Europe with his family, collecting Orthoptera on all possible occasions, while those of 1907, 1909 and 1910 we spent together in the field in the western states, in the inaugural work on a project which had slowly crystallized in our minds—a comprehensive series of Orthopteran field studies covering all the major areas of the United States, except for the few sections which were fairly well known, with as a future objective the preparation and publication of a

monographic work on the Orthoptera of North America. For forty years this remained the incentive behind the seasons of field work which have been carried out, largely working together in the field and in the laboratory. It is the hope of the surviving member of this rather unusual partnership that he may be able to carry this work forward to its completion, if for no other reason than as a tribute and memorial to the one who gave so much of his life, effort and resources to pave the way. A large number of joint papers, based in greater part on collections secured on the numerous field investigations, have been published preliminary to the projected larger work, and many others of the same type were brought out individually by Hebard in the last twenty-five years.

Following the completion of his college work, and in accordance with his father's wishes, Morgan spent a year in a banking office in Philadelphia, familiarizing himself with certain phases of business operations and the handling of investments and securities. In 1911 he was able to realize what had been for some years his greatest desire—that of devoting his time uninterruptedly, in both the field and laboratory, to his beloved Orthoptera. From that time until the late nineteen thirties, when physical limitations became restricting factors, he was seldom absent from his work desk for more than a short time, except when in the field. His plan for the formation of the Hebard Collection developed even before he was able to give unrestricted time to research, and the carefully planned seasonal field explorations, which occupied most of our summers from 1907 to 1928, had already been worked out in conferences and put into effect before his college years were ended. At a desk adjoining that of his colleague the days largely were spent in the preparation of the many important studies which came from his pen. He maintained a very extensive correspondence, studied numerous collections for institutions and colleagues elsewhere, and arranged important exchanges, usually of paratypic material, with other institutions, the majority of these abroad.

The physical arrangement of the Hebard Collection was entirely a personal task, to which he gave greatly of time and

energy, providing the entire housing in which this extensive series was quartered. The collection was physically deposited at the Academy from its inception, and bequeathed to that institution from the same early period. However, it was formally presented in toto, with its entire housing, in 1945, somewhat over a year before Mr. Hebard's death. During the twenty-five most active years of his work at the Academy he provided financially at various times for artists and preparators, and assisted in meeting the publication costs of a considerable number of the contributions of which he was sole or joint author.

The field investigations in the United States which Mr. Hebard planned and financed virtually in their entirety, were carried out by the two associates over fifteen seasons extending from 1905 to 1928, from six weeks to three months being spent each year. In addition in 1920 the two worked in Jamaica, Panama and the Santa Marta region of Colombia, while in 1913 Hebard visited and actively collected in Cuba, the Bahamas, Jamaica and Panama. As already mentioned, as a young man abroad with his parents in 1906 and 1908, he worked actively in the field in parts of England, France and Switzerland, and in a later year was able to do certain field work in parts of Italy and in Algeria. In London he early made the personal acquaintance of the late Dr. W. F. Kirby, and on subsequent visits met Dr. B. P. Uvarov, Dr. H. Karny and Dr. Lucien Chopard, with all of whom he long corresponded.

In the field Hebard was an indefatigable worker, endowed with superb hearing, which was of exceptional value in locating nocturnal stridulating forms. In addition he had that essential of the mountain worker, a splendid pair of lungs, and a physique which, while never massive, was a reservoir of energy, that could be galvanized into sustained action when time or fickle weather made the effort to reach and examine a certain peak or ridge a gruelling drive. Many high mountain summits, seldom visited by entomologists, where little known and often distinctive Orthoptera had been taken or were suspected to occur, were climbed and examined—Mt. Whitney, San Gorgonio Peak, San Francisco Peaks, Mt. Livermore in the Davis Mountains of

Texas, the high peaks of the Chisos Range in the same state, the Ruby Range, Charleston Peak and Mt. Wheeler in Nevada, Santa Fé Baldy in New Mexico, the summits of the Tushars in Utah, the edge of the ice on Mts. Rainier, Hood and Shasta, the Steen Mountains of Oregon, the Warners in California, and the Quinn Canyon Range in central Nevada, the Tetons of Wyoming and numerous others. Similarly the low hot deserts were as carefully examined, not once but frequently in several different seasons spent in the same general area. Death Valley was visited in the best Orthoptera season, which was in August, with a shade temperature of 120°, as well as many localities in the Yuma, Colorado, Mohave and Amargosa deserts in the best collecting, but physically trying, months of July, August and September. The Florida peninsula, as well as the Keys, the coastal plain of the southeastern states and the Gulf Coast region were areas in which portions of a number of seasons were spent, while all or part of five seasons were spent in the state of Texas alone.

The total number of localities examined in this work reached some thousands, and these extended from Virginia to the Florida Keys, westward to California and Washington. Extensive areas where considerable work had already been done by resident entomologists were usually omitted, and efforts were concentrated on those either little or very imperfectly known as far as the Orthoptera were concerned.

The plan of work varied from that first used of following railroad lines and stopping at points roughly fifty miles apart or with sharply contrasted physiography, and then striking out for promising environments, to the final development of using a motor truck, with full camp equipment, on individual circuitous trips of quite a few thousand miles each, with a number of specific areas as objectives. Saddle horses and pack animals were sometimes used, but most actual climbing in high places was accomplished only by using one's own feet, and sometimes hands as well.

The number of Orthoptera specimens taken in the course of this field work, extending from 1905 to 1928, totalled well over one hundred thousand, supplemented to an exceptional degree

by many hundreds of pages of critical field observations, always written up daily, and as yet only in part utilized in print. These notes always represented the observations and conclusions of the two workers, and were generally written up by Hebard in the evening sessions when the day's catch was being prepared. It sometimes happened that after a full day in desert sun, when as much as twenty miles had been covered on foot, the work of eviscerating and packing the material secured would take from five to seven hours more, or until the wee hours of the next morning. In several cases the day's catch reached a thousand specimens, but collecting always had objectives and there was no indiscriminate accumulation of numbers alone. Back of all the work was a studied effort to find and examine natural and, as far as possible, unaltered conditions. Cultivated land was largely by-passed, as the original orthopterous fauna was always the objective, and not the alterations brought about by cultivation or the clearing of native vegetation. In the earlier years four hand-carried fiber telescopes held all needed equipment for two, camp as well as collecting, an army "doggie" or shelter tent, nest of simple cooking utensils, mess kits, flash-lights and blankets. Often the bed was no more than a single blanket in a sand draw. When truck work became practicable, army cots and gasoline pressure lights became standard equipment, an era of luxury compared with the earlier days.

In addition to the long-range North American project, and the studies based in part on the results of the same, Mr. Hebard was steadily augmenting the breadth and coverage of the Hebard Collection by the purchase of unstudied Orthoptera material from various parts of the world, as well as that taken by certain reputable collectors in especially desirable sections of the United States. Unstudied series were purchased from Mexico, British Honduras, Guatemala, Costa Rica, Panama, Colombia, Venezuela, Trinidad, Amazonia, southern and eastern Brazil, Paraguay, Spain, the Balkans, Uganda, Kenya, the Belgian Congo, Natal, Rhodesia, Liberia, Madagascar, India, southern and interior China, Java, the Moluccas and Queensland, while the great Boettcher series of Philippine Orthoptera was acquired almost in its entirety. Two famous and classic collections, as-

sembled by outstanding investigators, were purchased in toto, i.e., the Lawrence Bruner collection of North and Central American Orthoptera, including hundreds of types of that author, many of these of species published in the section of the Biologia Centrali-Americana which came from his pen, and the J. L. Hancock collection of Tetrigidae of the world, the largest single collection of that group in existence, and also including some hundreds of that author's types. When all of these series were added to the representation of Orthoptera and Dermaptera previously owned by the Academy of Natural Sciences, as they now have been, there is found in one collection in Philadelphia, the largest and most comprehensive collection of Orthoptera in the world, even surpassing those in London, Paris and Berlin.

For many years Mr. Hebard carried on important exchanges with European institutions, and in consequence paratypic material of hundreds of species described from those collections were added to the Philadelphia series, in return for paratypes of species described by the Philadelphia group.

The original contributions to our knowledge of the Orthoptera and Dermaptera which came from the pen of Morgan Hebard, either individually or jointly with the present biographer, totalled 197 titles, with a pagination in excess of five thousand. The North American fauna always held a preeminent position in his mind and work, and among his contributions to that fauna were faunistic studies on the Dermaptera and Orthoptera of a number of specific states or provinces, as Alberta, North Dakota, South Dakota, Montana, Minnesota, Colorado, Arizona, Kansas, Oklahoma and Illinois, while his death left unfinished an extensive one on those elements of the Texas fauna. The purely systematic studies on the genera and species of the same orders were broad in coverage, including, among many others, comprehensive monographic works on the North American Blattidae or cockroaches, on the North American crickets of the subfamilies Nemobiinae and Mogoplistinae, and of the katydid group Pterophyllae, on many elements of the locusts of the group Melanopli, and, with this biographer, a considerable number of papers on sections of the North American Tettigoniidae or katy-

dids, the crickets of the genus *Gryllus* as found in North America, and the locusts of the Eumastacinae of the same area.

Hebard's studies on the Dermaptera and Orthoptera of other lands covered a very broad range, both systematically and faunistically. He was particularly interested in the cockroaches, and his various contributions to our knowledge of the Blattidae are probably more basic and fundamental for future systematic workers in that field than those of any other student since the days of Brunner and de Saussure, in the nineteenth century. His exotic faunistic work, which covered some scores of papers, was particularly important in connection with the Orthoptera of Baja California, Mexico, the West Indies, Panama, Colombia, Ecuador, Brazil, Malaya, southern India, Australia (chiefly on the Blattidae), and the Philippine, Hawaiian, Society, Marquesas and Galapagos Islands. His comprehensive studies of the Orthoptera of Panama, and of the Society, Marquesas and Hawaiian groups, are works which will long remain basic in their particular fields.

In the laboratory Morgan Hebard was completely absorbed in his work. He possessed to a high degree the ability to concentrate so completely on the subject in hand that he was almost oblivious to what went on about him. He could make his minutes count to a degree few possess, and also exclude from his mind or attention matters which he considered irrelevant to the work before him. With a keen, incisive mind he was able to grasp far more rapidly than most scholars the implications of a set of facts, and promptly to coordinate his conclusions. His rough manuscripts grew rapidly, set down in pencil in an almost cabalistic system of abbreviations, which he alone could follow with complete assurance. In consequence he preferred to type his own manuscripts, which he did at home, largely at night or over weekends. Similarly he personally assembled and mounted the original drawings for all the illustrations of his many papers, while the arrangement of the scores of thousands of determined specimens contained in the Hebard Collection always received his personal attention. While he had one or more skillful preparators constantly available, he often preferred personally to handle

repair work on particularly valuable or historic specimens, and his technique always was of the highest order. As an independent investigator, without routine responsibilities except such as he might care to assume, he was able to complete a relatively large amount of critical study in a relatively short time, and he moved from project to project with a celerity evidencing the dynamic energy which was so characteristic of him until his later years.

In 1913 Mr. Hebard married Margaret Champlin Perry Claxton of Philadelphia, a grand-daughter of the artist, John La Farge, and whose family ties also included one of the city's most distinguished medical families. Of their three children, two sons and a daughter, the younger son (Morgan, Jr.) and the daughter (now Mrs. Richard Lloyd), with Mrs. Hebard, survive their father.

From boyhood Morgan Hebard had loved the out-of-doors—hunting, trap-shooting, angling, golf and tennis—encouraged by his father who was an all-round sportsman of sterling qualities. To Morgan tennis and golf were good sports, but his favorite ones were angling—both trout and tarpon—and shooting. He was an exceptional shotgun shot, both at game and at the traps, and while a student at Yale, where he captained the trap-shooting team, was intercollegiate high gun, and for years he was exceedingly proficient with both rifle and revolver.

During the First World War he was commissioned a lieutenant, serving first with the Cinematographic Section of the Signal Corps, but later was transferred to the Military Intelligence Division. Released from duty shortly after the signing of the Armistice, he at once returned to and plunged again into his research work. While in the service he had hoped to be sent overseas, and there assigned to field intelligence work, but his duties in the Intelligence, and in which he immersed himself as deeply and as completely as he did when engaged with scientific problems, were concerned with a very vital phase of Army security in the camps in the United States, and in consequence he was held on this side of the Atlantic.

While as a child Morgan Hebard had been a sufferer from a bronchial affection, in his mature years he was seldom ill, until

in the thirties there became evident a progressive arthritic condition, which from being merely restrictive developed to a point where movements became painful and circumscribed. Long periods were spent under treatment in Philadelphia, New York and Boston, some single hospitalizations extending over almost a year, with fluctuating results. During these long absences from his usual haunts, he kept alive his interest in the Orthoptera, and in those periods, sometimes a number of months in length, when a periodic betterment would permit him to be brought to the Academy, he completed some of his last published papers, taking the same keen pleasure, as in earlier years, in finishing any piece of work. Arthritic distortions had seriously crippled his hands, but twice he virtually learned to write anew. In the last few years unable to hazard the rather long trip from his home to the Academy, he assembled pages of data from certain series which were taken to him for tabulation, and also virtually completed an important piece of revisionary work which will be published posthumously.

At Christmas time December 1946 I had a very cheery telephone conversation with him. It was full of the expectation of a sufficient betterment to be able to resume his trips to the Academy. A few days later, on December 28, 1946, a sudden heart attack ended the years of struggle against his insidious enemy arthritis.

Two of the outstanding personal characteristics of Morgan Hebard were an ability to push to completion, regardless of the obstacles physical or otherwise, a project with which he was engaged, and second, the determination to round out, to develop and to complete as far as possible, the great collection which he was responsible for assembling. Quick tempered and outspoken when confronted with injustice or incompetence, he was innately kind and sympathetic to those with whom he worked, regardless of their station. Although accustomed to a life of relative luxury, he was perfectly at home in the most rugged situations and with people in all walks of life. An excellent scholar in French and German, in both of which he had been tutored for years before his college days, and also with a good knowledge

of Spanish and Greek, he was often consulted by colleagues on difficult translations or interpretations. Possessed of an infectious humor, he was generally able to draw some amusement from situations which most people would regard as downright calamities. He possessed no false pride, and had no hesitation in asking for, accepting and acknowledging help in solving a problem before him. Similarly he was happy to be able to help others, and did so countless times. On outfit trips his personality soon won the friendship, respect and cooperation of those who cooked the meals and wrangled the horses or drove the truck. During a friendship and association covering forty-three years the biographer had many occasions to learn how deeply apparently trivial and passing things would impress themselves indelibly upon the mind and thoughts of his friend and colleague, sometimes recalled with an amused chuckle or grave retrospection a decade later.

To Morgan Hebard the attendance at formal meetings of any character was a sheer waste of valuable time. Except for those of the Scientific Council of the Academy of Natural Sciences of Philadelphia, of which he was a member for over twenty years, he rarely attended any such gatherings, either in Philadelphia or elsewhere. He was elected a Fellow of the Entomological Society of America some decades before his death, and was long a member, and for a time Treasurer, of the American Entomological Society. While elected a Life Member when a minor, at the time of his death he was a Benefactor of the Academy of Natural Sciences of Philadelphia, this conferred in recognition of his gift of the Hebard Collection in 1945. He was Curator of Insects of the Academy for a number of years, but accepted no salary for this service, and also held the title of Research Associate of the Academy, and later Research Fellow, for over twenty years. He was an honorary member of the Entomological Society of France, and also of the Colombian Natural Science Society, the latter conferred in recognition of his numerous papers on the Orthoptera of that country.

In 1945 the Hebard Collection of Dermaptera and Orthoptera was unrestrictedly presented to the Academy, where it had long

been desposited. The collection comprised approximately 250,000 specimens, representing in the North American field alone almost all known members of those orders in that fauna, in a number of cases the representation of the species being all known to exist in any collection. The number of species from the whole world represented by single types was 1369, with in addition approximately 2000 species by paratypes. The whole series filled 2400 Academy standard glass-top cabinet drawers, contained in 147 metal cases, all of which, originally supplied by Mr. Hebard, were presented with the collection.

As forty-three years constitutes by far the greater part of an adult life, the personal friendship of, and association with, Morgan Hebard formed a very vital and inseparable segment of my own days during the years which have passed. The memories of the many days spent together in the laboratory across adjoining desks, in desert heat or on mountain slopes, will always remain fresh, inspiring and treasured. All those who knew him well have lost a charming, kindly and brilliant associate. The loss to American entomology is also great, for there has gone from us a keen, logical and penetrating mind, a gentleman and a scholar, whose years in the field and in the laboratory brought high position in his field of work to his name and to his intellectual home, in which, as his work drew to a close, he placed the results of his labors.

JAMES A. G. REHN

A New Genus and Species of Buprestidae from Southern California (Coleoptera) *

By WILLIAM F. BARR, University of Idaho

The apparently new genus and species of the family Buprestidae, tribe Buprestini described below, has been in the writer's collection for several years, having been represented by only a single specimen. Attempts have been made on several occasions to secure additional material, but with little success. It is now

* Published with the approval of the Director of the Idaho Agricultural Experiment Station as Research Paper no. 276.

felt that this new genus and species should be made known, in view of the fact that Knull [1] has recently described a remarkable new genus which also belongs in the Buprestini. Thus, these new genera becoming known at approximately the same time may help to throw new light on the relationships of the genera of North American Buprestidae.

Appreciation is expressed to J. N. Knull who has been most helpful by comparing specimens with material in his collection and to R. G. Dahl who presented the specimen, here described, to the writer.

Genus **TRICHINORHIPIS** new

Small, rather broad, somewhat convex. *Head* of moderate size; eyes widely separated, rather large, elliptical and vertical; antennae eleven-segmented, attaining hind margin of pronotum, rather densely clothed with fine, short, erect pale hairs, first and second segments feebly swollen, clavate, third segment narrowly elongate, clavate, segments four to ten flabellate, rami increasing in length to sixth segment, then slightly decreasing in length, rami arising from near apex of fourth and fifth segments, at apex of remaining segments, eleventh segment elongate, slender; maxillary palpus with last segment rather elongate, conical, apex pointed; mentum corneous, narrowly rounded in front. *Pronotum* much broader than long, convex, without evident lateral margins; sides widest slightly behind middle, evenly rounded, feebly sinuate at base; surface reticulate. *Scutellum* small, triangular. *Elytra* as broad as pronotum, covering abdomen except for pygidium, sides feebly sinuate; apices separately rounded; surface of each elytron with nine rows of rather coarse punctures forming striae which are somewhat sinuate, roughened at base and apex. *Undersurface* with the sides of metasternum nearly convex, lacking a large hairy depression; hind coxae triangular, posterior margin strongly oblique, somewhat arcuate, basal segment of hind tarsus as long as the three following segments.

Genotype: *Trichinorhipis knulli* new species.

[1] KNULL, J. N. 1947. Ohio Journal of Science, 47 (2): 69.

This genus belongs in the peculiar *Xenorhipis* group of the tribe Buprestini, which in the United States has contained, until the present, but two genera, *Xenorhipis* and *Hesperorhipis*. *Trichinorhipis* is apparently more closely related to the latter, but may be readily separated from both by being broader, having the pronotum broadly and evenly rounded at the sides and lacking lateral margins, having the sides of the metasternum nearly convex, having the last segment of the maxillary palpus distinctly pointed at the apex and by having the pubescent male antennae flabellate from the fourth segment.

Trichinorhipis knulli new species

Male: Form rather robust; black with large, conspicuous ivory elytral markings, feebly shining. *Head* convex, rather coarsely and shallowly reticulate, sparsely clothed with short, semi-recumbent silvery hairs, antennae flabellate from fourth segment, testaceous at base, gradually becoming darker towards apex, rami dark; clypeus narrow, broadly and shallowly emarginate in front. *Pronotum* convex, wider in front than at base, surface coarsely, shallowly reticulate, moderately clothed with short, semi-recumbent silvery hairs; front margin feebly bisinuate, median lobe broadly rounded; sides broadly and evenly rounded, widest slightly behind middle, feebly sinuate at hind angles which are somewhat angulate; hind margin very slightly bisinuate. *Scutellum* finely punctured, glabrous. *Elytra* broadly bilobed in front, not broader than pronotum, covering abdomen except for pygidium; humeri obsolete, humeral angles obtusely rounded; sides feebly sinuate to apical fourth, then abruptly and arcuately rounded to apices which are separately rounded and serrate; sutural margins slightly divergent behind middle; surface with a broad ivory band extending from in front of basal fourth to apical fourth of elytra, narrowly interrupted at suture, front margin broadly bilobed, hind margin irregularly truncate, basal and apical black areas feebly tumid; striae consisting of sinuate rows of deep, moderate-sized punctures, most conspicuous on ivory band, interstrial spaces rather finely and irregularly punctured on basal and apical black areas giving these areas a roughened appearance, interstrial spaces of ivory

band not conspicuously punctured, pubescence sparse, consisting of rows of very short, erect silvery hairs. *Undersurface* with prosternum irregularly reticulate, very sparsely pubescent, front margin nearly truncate; metasternum irregularly reticulate, convex, with a small feeble depression along the sides at outer margin of hind coxae, glabrous; abdomen swollen, finely, sparsely, asperately punctured, rather sparsely clothed with short, semi-recumbent silvery hairs, hind margin of last sternite broadly rounded. Length: 3.8 mm. Width: 1.3 mm.

Holotype, male from Painted Canyon, Riverside County California, June 21, 1940, collected by R. G. Dahl, who swept it from a small, dead, unidentified desert shrub at night. Type in the writer's collection.

This species is named after J. N. Knull as a slight token of appreciation for the many favors offered and the valuable assistance given to the writer during this and previous studies on Buprestidae.

No difficulty should be encountered in separating *T. knulli* from other species in the *Xenorhipis* group. Its shape and markings plus the generic characteristics already mentioned should be amply sufficient to prevent its being confused with any known species which it may superficially resemble.

New Species of Agrilus with Notes (Buprestidae and Eucnemidae)

By J. N. KNULL, Department of Zoology and Entomology, The Ohio State University

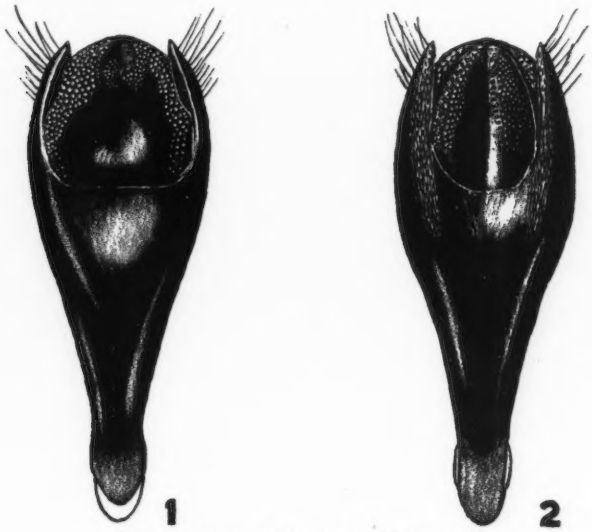
Agrilus cochisei n. sp. Figs. 1 and 2

Male. Form, size and color of *A. malvastri* Fishr., color bronze above and beneath; each elytron with distinct pubescent stripe near suture.

Head convex, slight depression on vertex; surface finely punctate, front densely pubescent; antennae short, when laid along side, extending little beyond anterior angles of pronotum, serrate from fifth segment.

Pronotum wider than long, wider in front than at rear,

widest in middle; anterior margin sinuate, median lobe prominent; basal margin sinuate; sides subparallel anteriorly, sinuate near base. When viewed from side, marginal and submarginal carinae separated in front, joined at base; disk very convex, slight median depression at base, lateral depression each side, carina on hind angle rather indistinct; surface coarsely densely scabrous, sides with recumbent white pubescence. Scutellum transversely carinate.



Male genitalia of *Agrilus cochisci* n. sp.
1. Dorsal view. 2. Ventral view.

Elytra wider than base of pronotum, sides subparallel near base, constricted in front of middle, broadly rounded back of middle, obliquely narrowed to rounded, serrulate apices; disk convex, each elytron with basal depression and elongate one in middle near suture.

Abdomen beneath sparsely, finely punctate, clothed with recumbent, white pubescence which is more conspicuous along sides of last three segments; first segment longitudinally flat-

tened, clothed with longer pubescence which extends to prosternal lobe; pygidium without projecting carina. Prosternal lobe broadly rounded. Tibiae with anterior and middle pairs mucronate on inner margin at apex. Tarsal claws similar on all feet, cleft, inner tooth shorter than outer one, not turned inward.

Length 5.4 mm.; width 1.2 mm.

Female. With first ventral abdominal segment not flattened; ventral median line of pubescence lacking; tibiae not mucronate.

Holotype male, *allotype* and one *paratype* labeled Dragoon Mts., ARIZ., Sept. 10, 1947, another *paratype* Chiricahua Mts., ARIZ., Sept. 12, 1947, all collected by D. J. & J. N. Knull and in collection of author.

This species would run to *A. malvastri* Fishr. in Fisher's key.[1] It can be separated by form of male genitalia.

Juniperella mirabilis Knull

1947. *Ohio Jour. Sci.*, 47: 69.

Reared specimens have confirmed my supposition that this is the species infesting junipers in the Santa Rosa Mountains, California.

Pachyschelus oculatus Schffr.

This species was present on foliage of *Desmodium batocaulon* Gray[2] in Chiricahua Mountains, Sept. 1–18, 1947. The larvae are leaf miners on this plant.

Pachyschelus uvaldei Knull

1941. *Ohio Jour. Sci.*, 41: 387.

Sexes in original description of this species should be reversed. This would make holotype a female instead of male.

Pachyschelus purpureus (Say)

Adults were collected in various parts of Ohio in May and June on foliage of wild crane's-bill (*Geranium maculatum* L.). Also collected on *Geranium* sp. foliage in Oak Creek Canyon, Arizona, Aug. 11.

[1] W. S. FISHER, U.S.N.M. Bul. 145, pp. 1–347, 1928.
[2] Determination by Dr. F. W. Pennell.

Deltometopus ereptus Bonvouloir

1870. *Ann. Soc. Ent. Fr.*, 185.

The writer is of the opinion that Dr. Horn [3] was in error when he stated that above species was same as *D. amoenicornis* (Say).

Males of what I consider *ereptus* Bonv. from Gainesville, Fla., Brownsville, Tex., Opelousas, La., and Vienna, Ill., have antennae ramous starting with sixth segment. Fifth segment over half again as wide as long, fourth segment about as wide as long. In *amoenicornis* (Say) antennae are ramous starting with fifth segment. Fourth segment wider than long.

Notes and News in Entomology

Under this heading we present, from time to time, notes, news, and comments. Contributions from readers are earnestly solicited and will be acknowledged when used.

Czechoslovakian Insect Pins are Now Available. For about a year, I and others have been buying insect pins from Czechoslovakia and I have found them satisfactory. One can get japanned steel pins with brass heads at the present price per thousand, according to the size of the order, of $3.50, up to 11,000; $3.00, up to 20,000; $2.80, up to 50,000; and $2.50 per thousand for orders over 50,000 pins. Duty (collected on arrival) is 30% and parcel post, export license, and insurance usually runs to about $4.00 for a lot of about 25,000 pins. Payment may be made by cashier's check and should accompany the order. If wanted, a price quotation may be had by air mail in about two weeks. An order sent by air mail is received usually in about six weeks.

In comparison with the only insect pins being manufactured in the United States, those from Czechoslovakia have heads that are better formed and stay on as well, and points and japanning that are definitely superior. Their steel is inferior, being not quite so stiff. Sizes run smaller than those made in America, so that a Czechoslovakian no. 3 is a trifle smaller in diameter than an American no. 2. All the Czechoslovakian pins are 39 mm. long. The address is: Yran, Praha 1., Dlouhá 14, Czechoslovakia.

[3] G. H. Horn, Trans. Amer. Ent. Soc. 13, p. 16, 1886.

Recent political changes prompted me to inquire of this company whether orders could still be placed. The following reply from Dr. Frant. Klimeš was dated March 18, 1948: "Please note that the political changes in our country are of no influence regarding to the business relations between the United States and Czechoslovakia. You may pay by check as well as ever before. (I am reading USA-newspapers too and regret to say that the reports are not quite true.) However, it is possible that the foreign trade of our country will be reorganized, but no details are known as today."

This note is written in the hope that by the time it is published, it will still be practical to get insect pins from Czechoslovakia.—HENRY TOWNES, McLean, Virginia.

Obituary

Ezra T. Cresson, Jr., for many years Associate Editor of "Entomological News," and for thirty-nine years, until his retirement on account of ill health in 1947, Assistant, and later Associate, Curator of Insects at the Academy of Natural Sciences of Philadelphia, died April 8, 1948. One of the outstanding dipterists of the country, Mr. Cresson was our leading authority on the Ephydridae, and his contributions to our knowledge of that group numbered many score. A biographical sketch will appear in a later issue of this JOURNAL.

Current Entomological Literature

COMPILED BY EDWIN T. MOUL AND RAYMOND Q. BLISS.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Allen, T. C.—Suppression of insect damage by means of plant hormones. [37] 40: 814–17. **Anon.**—Rearing aquatic insects. [Turtox News] 25: 166. **Bayard, A.**—A propos l'étiquetage. [110] 3: 230–32. **Benson, R. B.**—Theodore D. A. Cockerell (Obit.). [53] 161: 229–30. **Chapin, Knight and Miller**—Proposed changes in Article 25 (the law of priority) of the International Rules of Zoological Nomenclature. [80] 107 (2772): 166–67. **Dorsey, C. K.**—Population and control studies of the Palau gnat on Peleliu, western Caroline Islands. [37] 40: 805–13. **George and Mitchell**—The effects of feeding DDT-treated insects to nestling birds. [37] 40: 782–89. **Horton, Karel and Chadwick**—Toxicity of γ-benzene hexachloride in clothing. [80] 107: 246. **Merrill, E. D.**—On the control of destructive insects in the herbarium. [Jour. Arnold Arboretum] 29: 103–10. **Noury, E.-M.**—Pour suppléer ou remplacer le bocal à cyanure. [110] 3: 219–22. **Olberg, G.**—Blüte und Insekt. [Kosmos] July 1946: 9–12, ill. **Philip and Fournier**—Technique for the detection of insect moulting. [Ann. Rpt. Ent. Soc. Ontario] 75: 10–13, ill. **Tiegs, O. W.**—The development and affinities of the Pauropoda based on a study of Pauropus silvaticus. [74] 88: 275–336, ill. **Trager, W.**—Rudolf W. Glaser, 1888–1947. (Obituary.) [80] 107: 131–32. **Verdcourt, B.**—The sectioning of beetle elytra. [51] 6: 305–6.

ANATOMY, PHYSIOLOGY, MEDICAL—Allen, T. C.—(See under General.) **Armitage, H. M.**—The Mexican bean beetle in California (Coccinellid). [37] 40: 865–69. **Arvy et Gabe**—Contribution à l'étude cytologique et histochimique des formations endocrines rétrocérébrales de la larva de Chironomus plumosus. [Rev. Canadien de Biol.] 6: 777–96. **Beall, G.**—The fat content of a butterfly, Danaus plexippus, as affected by migration. [26] 29: 80–94. **Berry, P. A.**—Anthonomus vestitus and its natural enemies in Peru and their importation into the United States (Curcul.). [37] 40: 801–4. **Bonnet, P.**—Remarques sur la changement de couleur des cocons d'Araignees. [110] 3: 218–19. **Browning, H. C.**—Mechanical disturbance and light as factors influencing the pullulation of Calandra granaria. [72] 117: 675–91. **Chadwick, L. E.**—The respiratory quotient of Drosophila in flight. [12] 93: 229–39. **Coppel, H. C.**—The collection of spruce budworm parasites in British Columbia with notes on their overwintering habits. [Ann. Report Ent. Soc. Ontario] 75: 38–39. **Cowan and Shipman**—Quantity of food consumed by mormon crickets. [37] 40: 825–28. **Dahms, R. G.**—Oviposition and

longevity of chinch bugs on seedlings growing in nutrient solutions (Lygaeid). [37] 40: 841–45. **Davis and Landis**—Overwintering of potato flea beetles in the Yakima Valley (Chrysom.). [37] 40: 821–24. **Dexter, R. W.**—A checker-spot butterfly (E. editha) with three antennae. [Turtox News] 25: 145. **Donnelly, U.**—Seasonal breeding and migrations of the desert locust Schistocerca gregaria in western and north-western Africa. [Anti-locust Memoirs, British Museum] 3: 1–43. **Ellinger, Fraenkel and Kader**—The utilization of nicotinamide derivatives and related compounds by mammals, insects and bacteria. [Biochemical Jour.] 41: 559–68. **Flanders, S. E.**—A host-parasite community to demonstrate balance. [26] 29: 123. **Hafez, M.**—The biology and life-history of Apanteles ruficrus (Braconid). [Bull. Soc. Fouad I D'Ent., Cairo] 31: 225–49, ill. **Hanna, A. D.**—Studies on the Mediterranean fruit-fly Ceratitis capitata (Trypaneid): II. Biology and control. [Bull. Fouad I D'Ent., Cairo] 31: 251–85, ill. **Henry, L. M.**—The nervous system and the segmentation of the head in the Annulata. [50] 12: 83–110. **Hovanitz, W.**—A graphic method of illustrating ecological and geographical distributions. [26] 29: 121–22. **Huntsman, A. G.**—Method in ecology—biapocrisis. [26] 29: 30–42. **Hutchinson, R. N.**—Influence of winter night temperatures on the California red scale (Coccid). [37] 40: 921–22. **Lumsden, W. H. R.**—Observations on the effect of microclimate on the biting of Aëdes aegypti (Culic.). [40] 24: 361–73. **MacGill, E. I.**—The anatomy of the head and mouth parts of Dysdercus intermedius. [72] 117: 115–28, ill. **Mackensen and Roberts**—A manual for the artificial insemination of queen bees. U. S. Dept. of Agric., Agric. Research Adm., Bur. Ent. and Plant Quarantine. Feb. 1948. 33p. mimeogr., ill. **Michener, C. D.**—A character analysis of a solitary bee, Hoplitus albifrons (Megachilid). [100] 1: 172–85. **Parry, D. A.**—The function of the insect ocellus. [40] 24: 211–19. **Rayment, T.**—Biology and taxonomy of the solitary bee Parasphecodes fulviventris. [Australian Zoologist] 2: 76–95, ill. **Richards, O. W.**—Observations on grain-weevils, Calandra. General biology and oviposition. [72] 117: 1–43. **Rosenstiel, R. G.**—Dispersion and feeding habits of Anopheles freeborni. [37] 40: 795–800. **Roveda, R.**—Bombyx mori y Nosema bombycis. [Rev. Fac. Agron. y Vet., Buenos Aires] 11: 334–42. **Slifer, E. H.**—A simplified method for breaking diapause in grasshopper eggs. [80] 107: 152. **Siverly, R. E.**—A morphological study of the male and female genitalia of

H. armigera. [1] 38: 712–24. **Šulc, K.**—Äussere Morphologie, Metamorphose und Lebenslauf von Phenacoccus aceris Sign. (Coccoidea). [Acta Soc. Scient. Nat. Moravicae, Brno] 15 (12): 1–52. 1943. **Thorpe and Crisp**—Studies on plastron respiration. I. The biology of Aphelocheirus (Hemi., Aphelocheir.) and the mechanism of plastron retention. [40] 24: 227–69. II. The respiratory efficiency of the plastron in Aphelocheirus. *Ibid.*: 270–303.—III. The orientation responses of Aphelocheirus in relation to plastron respiration, together with an account of specialized pressure receptors in aquatic insects. *Ibid.*: 310–28, Pl. 6 and 7.—A metal micro-respirator of the Barcroft type suitable for small insects and other animals. *Ibid.*: 304–09. **Walshe, B. M.**—On the function of haemoglobin in Chironomus after oxygen lack. [40] 24: 329–42.—The function of haemoglobin in Tanytarsus (Chironom.). *Ibid.*: 343–51. **Weiss, C. M.**—Observations on the abnormal development and growth of barnacles as related to surface toxicity. [26] 29: 116–19. **White, M. J. D.**—The cytology of the Cecidomyidae. IV. The salivary-gland chromosomes of several species. [44] 82: 53–58. **White, R. T.**—Milky disease infecting Cyclocephala larvae in the field. [37] 40: 912–14. **Willis, E. R.**—The olfactory responses of female mosquitoes. [37] 40: 769–78.

ARACHNIDA AND MYRIOPODA—Bonnet, P.—(See under Anatomy.) **Boyd, E. M.**—A new mite fom the respiratory tract of the starling (speleognath). [65] 50: 9–14. **Chamberlin, J. C.**—The Vachoniidae—a new family of false scorpions. [Bull. Univ. Utah] 38: 3–15, ill. (*). **Chamberlin, R. V.**—A summary of the known No. American Amaurobiidae. [Bull. Univ. Utah] 38: 3–31, ill. (k*). **Chickering, A. M.**—The Mimetidae (Araneae) of Panama. [84] 66: 221–48 (k*). **Ives, J. D.**—Breeding habits of a cave spider, N. canteri. [38] 63: 215–19. **Kratochvíl, J.**—Etude sur les Araignées cavernicoles du genre Stygophlocus. [Acta Soc. Scien. Nat. Moravicae, Brno.] 12(5): 1–26. **Pike, R. B.**—Galathea (Decopod Crust.). [Proc. and Trans. Liverpool Biol. Soc.] 55: 1–179, 20 pls. **Radford, C. D.**—New larval mites (Trombiculid). [72] 117: 579–601, ill. **Tiegs, O. W.**—(See under General.) **Van Riper, W.**—The banded garden spider. [56] 57: 72–74, ill.

SMALLER ORDERS—Broadhead, E.—A further description of Liposcelis entomophilus (Corrodentia: Liposcelidae) with a note on its synonymy. [69] 16: 109–13, ill. **Creighton and Dennis**—The tail louse in Florida. [37] 40: 911–12. **Traver, J. R.**—Notes on neotropical mayflies

(Ephemeridae). [Rev. de Ent., Rio de Janeiro] 18: 370–95, ill. (*). **Werneck, F. L.**—Os malófagos de 'Cervus elaphus,' 'Dama dama' e 'Capreolus capreolus.' [111] 7: 403–17 (S).

ORTHOPTERA—Cowan and Shipman—(See under Anatomy.) **Donnelly, U.**—(See under Anatomy.) **Judd, W. W.**—The European praying mantis (M. religiosa) at Hamilton, Ontario. [Canad., Field Nat.] 61: 197. **Palmer, E. L.**—Grasshoppers and their kin. [54] 41: 81–88, ill. **Parry, D. A.**—(See under General.) **Roland, M.**—Note sur l'accouplement de Nemobius sylvestris (Gryllid). [110] 3: 216–17. **Slifer, E. H.**—(See under Anatomy.)

HEMIPTERA—Dahms, R. G.—(See under Anatomy.) **Hutchinson, R. N.**—(See under Anatomy.) **Knowlton, G. F.**—Boxelder bug nymphs feeding on dead honeybees. [37] 40: 915. **Monte, O.**—Sobre Tingideos Americanos com descricoes de especies novas. [Rev. de Ent., Rio de Janeiro] 18: 429–32 (*). **Sulc, K.**—(See under Anatomy.) **Thorpe and Crisp**—(See under Anatomy.) **Wygodzinsky, P.**—Sôbre alguns 'Reduviidae' do Brazil central. [111] 7: 423–34 (*).—Sobre um novo genero neotropico de vesciinae, com consideracoes sobre a subfamilia (Reduviidae). [Rev. de Ent., Rio de Janeiro] 18: 411–16, ill. **Yothers, M. A.**—DDT and the woolley apple aphid parasite Aphelinus mali. [37] 40: 934.

LEPIDOPTERA—Avinoff and Shoumatoff—An annotated list of the butterflies of Jamaica. [Annals Carnegie Mus.] 30: 263–95. **Beall, G.**—(See under Anatomy.) **Beaufoy, S.**—Butterfly lives. London: Collins, 4 to Pp. 128 12*s* 6*d*. **Comstock, J. A.**—Notes on the early stages of Adelocephala heiligbrodti f. hubbardi (Citheroniid). [21] 46: 72–77. **Coppel, H. C.**—(See under Anatomy.) **Dexter, R. W.**—(See under Anatomy.) **Dos Passos and Grey**—Systematic catalogue of Speyeria (Nymphalidae) with designations of types and fixations of type localities. [2] 1370: 1–30. **Evans, W. H.**—The mystery of the black powder (Hemaris senta). [54] 41: 97–98, ill. **Flanders, S. E.**—(See under Anatomy.) **Fox, R. M. and J. W.**—Ithomiinae of Rancho Grande, Venezuela, including two new species. [95] 32: 173–78, ill. **Hovanitz, W.**—(See under Anatomy.) **Kratochvíl, J.**—Argyresthia laevigatella H. S. (Yponomeutid). [Acta Soc. Scien. Nat. Moravicae, Brno] 15(3): 1–54. 1943. **Petersen, B.**—Die geographische Variation einiger Fenno-skandischer Lepidopteren. [Zool. Bidrag, Uppsala] 26: 329–531. **Roney, C. N.**—The beet armyworm on flax (Noctuid). [37] 40: 931–32. **Roveda, R.**—(See under Anatomy.) **Siverly, R. E.**—(See under

Anatomy.) **Travassos, L.**—Contribuição ao conhecimento dos 'Arctiidae,' XIV Genero Euchlaenidia. [111] 7: 465–70 (S). **Wiltshire, E. P.**—Early stages of palearctic Lepidoptera, IX (Satyr., Notod., Noct., Geom., Pyral.). [29] 60: 1–3.

DIPTERA—Alexander, C. P.—Notes on the tropical American species of Tipulidae. [Rev. de Ent., Rio de Janeiro] 18: 317–60, ill. (*). **Arvy et Gabe**—(See under Anatomy.) **Barretto, M. P.**—Estudos sôbre 'Stratiomyidae' Brasileiros, I Duas novas espécies de 'Rhingiopsis.' [111] 7: 439–43. **Carrera, Lopes, e Lane**—Contribuição ao conhecimento dos 'Microdontinae' neotrópicos e descrição de duas novas espécies de Nausigaster (Syrph.). [111] 7: 471–86. **Casanges, A. H.**—The development and longevity of Haemagogus mosquitoes under laboratory conditions. [52] 7: 173. **Chadwick, L. E.**—(See under Anatomy.) **Curran, C. H.**—How flies fly. [56] 57: 56–63, ill. **Dampf, A.**—Notas sobre Flebotomidos Americanos. [Rev. de Ent., Rio de Janeiro] 18: 296–316, ill. **Dorsey, C. K.**—(See under General.) **Goffe, E. R.**—The wing venation of Syrphidae. [28] 83: 225–32. **Hanna, A. D.**—Ceratitis capitata. (See under Anatomy.) **Hull, F. M.**—More flies of the genus Baccha (syrphidae). [Rev. de Ent., Rio de Janeiro] 18: 395–410 (*). **Kartman, Newcomb, Campan and Morrison**—Mosquitoes collected in Dakar, French West Africa, incidental to army malaria surveys. [52] 7: 110–15. **Lane, J.**—Novas especies de Palpomyia do Brasil (Ceratopogonidae). [Rev. de Ent., Rio de Janeiro] 18: 438–47 (k).—Novos Mycetophilinae do Brasil (Mycetophilid). *Ibid.* 18: 448–58. **Lane y Neghme**—Sobre el Anopheles (Nyssorhynchus) pictipennis. [Biologica, Santiago de Chile] 4: 83–93, ill. **Lindquist and Roth**—Species and incidence of cattle grubs in Oregon. [37] 40: 930–31. **Lumsden, W. H. R.**—(See under Anatomy.) **Paramonow, S. J.**—Kurze Übersicht der Sericosoma-Arten (Bombyliid). [Rev. de Ent., Rio de Janeiro] 18: 361–69 (k*). **Rosentiel, R. G.**—(See under Anatomy.) **Trembley, H. L.**—Biological characteristics of laboratory reared Aedes atropalpus. [52] 7: 173. **Walshe, B. M.**—(See under Anatomy.) **White, M. J. D.**—(See under Anatomy.) **Willis, E. R.**—(See under Anatomy.)

COLEOPTERA—Armitage, H. M.—(See under Anatomy.) **Arrow, G. J.**—A few notes on West Indian Dynastine Beetles and descriptions of two new species. [6] 14: 221–24. **Balachowsky, A.**—Biologie et dégâts de Ceutorrhynchus macula-alba, Curculionide nuisable aux cultures d'oeillete. [110] 3: 208–12. **Berry, P. A.**—(See under

Anatomy.) **Bondar, G.**—Notas entomologicas da Baia XIX. Estudos en Curculionideos Sul-Americanos. [Rev. de Ent., Rio de Janeiro] 18: 273–95. **Browning, H. C.**—(See under Anatomy.) **Darlington, P. J. Jr.**—West Indian Carabidae. The species of the Cayman Islands. [28] 83: 209–11. **Davis and Landis**—(See under Anatomy.) **Dillon and Dillon**—The tribe Dorcaschematini (Cerambycidae). [83] 73: 173–298. **Doucette, C. F.**—Host plants of the cabbage seedpod weevil. [37] 40: 838–40. **Ellinger, Fraenkel and Kader**—(See under Anatomy.) **Ermisch, K.**—Mordelliden und Scraptiden aus baltischem Bernstein. [Ent. Blätter, Krefeld, Gy.] 37: 177–85, ill. **Guerin, J.**—Nova espécie do gênero 'Saxinis' (Clytr.). [111] 7: 451–52 (S). **Hustache, A.**—Zygopinae de l'Amerique méridionale (Curculionid). [Acta Ent. Sect. Mus. Prague] 17: 162–90 (S*). 1939. **MacGill, E. I.**—(See under Anatomy.) **Obenberger, J.**—De nonnullis Americae borealis generis Melanophilae Eschsch. speciebus (Buprestid). Acta Ent. Sect. Mus. Prague] 31–32: 317–22, ill. 1944. **Richards, O. W.**—(See under Anatomy.) **Robinson, M.**—Two n. sp. of Scarabaeidae. [83] 73: 169–71. **Saylor, L. W.**—New South Amer. scarab beetles of the genus Astaena. Rev. de Ent., Rio de Janeiro] 18: 433–37. **Sellier et Razet**—Une anomolie cephalo-thoracique inédite chez Lucanus cervus. [110] 3: 223–25. **Thery, A.**—Buprestides nouveaux. [6] 13: 663–83, ill. **Verdcourt, B.**—(See under General.) **Voss, E.**—Monographie der Rhynchitinen-Tribus Rhinocartini sowie der Gattungsgruppe Eugnamptina der Tribus Rhinchintini (Curculionid). [Deutsche Ent. Zeitschr.] 1941: 113–215. **White, R. T.**—(See under Anatomy.)

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THE STINGLESS BEES (MELIPONIDAE) OF THE WESTERN HEMISPHERE. *Lestrimelitta* and the following subgenera of Trigona: Trigona, Paratrigona, Schwarziana, Parapartamona, Cephalotrigona, Oxytrigona, Scaura, and Mourella. By Herbert F. Schwarz. Bull. Amer. Mus. Nat. Hist., vol. 90, pp. i–xviii + 546, figs. 1–87, pls. 1–8. Price $7.00.

This magnificent monograph, consisting in all of 564 pages, and constituting volume 90 of the Bulletin of the American Museum of Natural History, is in a sense the second part of Mr. Schwarz' monograph of the stingless bees of this hemisphere. Part one, the genus *Melipona*, appeared in 1932 (Bull. Amer. Mus. Nat. Hist., vol. 63, pp. 231–460). The present volume covers the genus *Lestrimelitta* and about half of the subgenera of the large genus *Trigona*. It is hoped that Mr. Schwarz will find opportunity to complete this important project by publishing a third part on the remaining subgenera of *Trigona*.

One of the most important aspects of this volume is the introduction, consisting of the first 166 pages. This portion of the monograph concerns principally the biology of the stingless bees, not only of those treated systematically in this book but of the entire group, including the genus *Melipona*, and from the standpoint not merely of the western hemisphere, but of the entire world. This section is an extraordinarily complete survey of the much scattered literature pertaining to the biology of these bees. It makes readily available in the English language all that is known on this subject, so that a student desiring to make further investigations in this interesting field can, from this one work, obtain all the information he needs concerning previous studies. Much space is also devoted to man's utilization of the wax and honey of stingless bees.

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These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

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